ABSTRACT

Annual maximum rainfall data for 1-, 3-, 5-, and 7-day from 34 stations distributed in the State of Selangor, Malaysia were analyzed using probability weighted moments (PWM) to study rainfall frequency analysis (RFA). The study was stressed on regional rainfall analysis and the region was partitioned in two sub-regions; coastal region (CR) and interior region (IR). Using the X-10 test to test regional homogeneity, it was found that the whole region, CR, and IR were passed the tests as the homogeneous region. A preliminary study for the whole region using statistical conventional moments revealed that 47%, 12%, and 41% of data sets follow the generalized extreme value (GEV), Gamma (GAM), and Log Normal (LN) distributions, respectively. Applying PWMs method to at-site data, two types of distributions, GEV and generalized logistic (GLOG) were most suitable to the rainfall data in Selangor. The higher value for statistical L-moment, L-Ck, the sample tended to follow the GLOG distribution and it followed the GEV distribution for the lower L-Ck. The terms of quantile estimates, the GLOG gave a higher value compared to those of GEV, especially for the higher return periods. An additional study was done in proposing a modified Hersfield's approach in PMP calculation. The modification was proposed by replacing the conventional mean value with mean value of the one-tenth greater data. The correction factor of 2.65 proposed to be inserted to the Km Hersfield's approach to get the PMP value 65% greater than that of the maximum observed data.